

## **CLAIMS**

1. A method of allocating processing capacity of system processing units in an extranet gateway, the method comprising the steps of:

establishing a first initial expected available bandwidth of a first of the system processing units;

establishing a second initial expected available bandwidth of a second of the system processing units; and

assigning a Virtual Private Network (VPN) tunnel to one of the first and second system processing units for processing by assessing current available bandwidths of the first and second system processing units, the current available bandwidths being determined by assessing the initial expected available bandwidth for that system processing unit as decremented by other processing requirements for that system processing unit.

2. The method of claim 1, wherein one of the other processing requirements comprises overhead processing requirements.

3. The method of claim 1, wherein one of the other processing requirements comprises processing requirements associated with other VPN tunnel assignments.

4. The method of claim 1, wherein one of the other processing requirements comprises processing requirements associated with another SPU handling a VPN tunnel assignment.

5. The method of claim 4, wherein the processing requirements associated with other VPN tunnel assignments comprise encapsulation and de-encapsulation processing requirements for the other VPN tunnels.

6. The method of claim 5, wherein the processing requirements associated with other VPN tunnel assignments comprise at least one of encryption and de-encryption processing requirements for the other VPN tunnels.

7. The method of claim 1, wherein the first initial expected available bandwidth is established by multiplying a first processor speed associated with the first system processing unit with a first conversion factor, and wherein the second initial expected available bandwidth is established by multiplying a second processor speed associated with the second system processing unit with a second conversion factor.

8. The method of claim 7, wherein the first conversion factor is the same as the second conversion factor.

9. The method of claim 8, wherein the first conversion factor is defined as the amount of bandwidth passable by a given processor per unit CPU speed.

10. The method of claim 7, wherein the step of assigning the VPN tunnel to one of the first and second system processing units comprises assigning the VPN tunnel to the system processing unit having the highest current available bandwidth.

11. The method of claim 10, wherein the highest current available bandwidth is based on an absolute bandwidth capacity basis.

12. The method of claim 10, wherein the highest current available bandwidth is based on a relative bandwidth capacity basis.

13. The method of claim 10, further comprising the step of reducing the current available bandwidth for the one of the first and second system processing units to which the VPN tunnel was assigned.

14. A network element, comprising:  
a first system processing unit (first SPU);  
a second system processing unit (second SPU); and  
control logic configured to:

establish a first initial expected available bandwidth for the first SPU;

establish a second initial expected available bandwidth for the second SPU; and assign a Virtual Private Network (VPN) tunnel to one of the first and second SPUs for processing by assessing current available bandwidths of the first and second SPUs, the current available bandwidths being determined by assessing the initial expected available bandwidth for that SPU as decremented by other processing requirements for that SPU.

15. The network element of claim 14, wherein the other processing requirements comprise:

overhead processing requirements;  
processing requirements associated with other VPN tunnels assigned to that SPU; and  
processing requirements associated with other VPN tunnels assigned to other SPUs.

16. The network element of claim 15, wherein the processing requirements associated with other VPN tunnels assigned to that SPU comprise encryption and de-encryption processing requirements for the other VPN tunnels.

17. The network element of claim 15, wherein the first initial expected available bandwidth is established by multiplying a first processor speed associated with the first SPU with a first conversion factor, and wherein the second initial expected available bandwidth is established by multiplying a second processor speed associated with the second SPU with a second conversion factor.

18. The network element of claim 17, wherein the first conversion factor is the same as the second conversion factor, and wherein the first conversion factor is defined as the amount of bandwidth passable by a given processor per unit CPU speed.

19. The network element of claim 17, wherein the control logic is configured to assign the VPN tunnel to one of the first and second SPUs by assigning the VPN tunnel to the SPU having the highest current available bandwidth.

20. The network element of claim 20, wherein the highest current available bandwidth is based on at least one of an absolute bandwidth capacity basis and a relative bandwidth capacity basis.